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27 January 1961

MEMORANDUM FOR: Director, Photographic Intelligence Center

SUBJECT : Summary Trip Report [redacted]

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1. [redacted] reported that the work on the [redacted] lenses is going well and that the microstereocomparator prototype should be available here in May 1961. Conditions at the Company seem a little confused and I believe the only encouraging thing, from our point of view, is the fact that we will have an opportunity to talk to [redacted] in March or April. [redacted] has chosen a protege to continue his lens design work, if and when he retires. The chap's name, I believe, is [redacted]. He is a very promising young man from all reports.

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2. [redacted] is submitting the proposal work done by [redacted] which was done for the [redacted] sub-contract for 400 l/mm optical systems. Included in the package is a 2X reduction system, a 4X enlarger and some projection apparatus. [redacted] was unwilling to continue on this sub-contract if he was limited to the spectrum range and the relative film speed of the diazo materials which were specified in the contract. This contract was initiated by Isador Herman's group at ATIC and is currently under the monitorship of Major Lewis.

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3. [redacted] believes that it is a reasonable trade-off, despite the slow speed, to go to a grainless medium such as diazo material. It is apparent that because of [redacted] unwillingness to design for the slow material that [redacted] will not continue as a sub-contractor on these optics. The lens designer most concerned here is [redacted].

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4. On rear projection screen materials the high acuity screen which [redacted] is making for the X-ray apparatus is being held very close because the manufacturer's techniques probably aren't patentable. For our information only, [redacted] described what he believes to be the process of producing these screens as a sandwich of two special, but not unique, optical glasses which are bonded together with bee's wax. They have literally been bombarded with orders from [redacted] etc. for samples of this material.

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SUBJECT: Summary Trip Report to New York Area

5. [] presented at a recent meeting at [] described a new rear projection system using this screen which [] who attended the conference, said was the finest he had ever seen. He promised to send us as much material on the projection apparatus as possible.

6. At [] we met a newcomer in the field, [] and [] who is now their General Manager for Engineering. He is a pleasant chap, well-spoken and technically very adept. He is the fellow who proposed the "white gloves" concept to the Air Force, especially ATIC, and the use of the diazo material. Demonstration of the printing technique certainly shows that a transfer of high contrast at 400 l/mm is feasible. However, the contact printing was done in a vacuum frame and took a 12 minute exposure. [] believes that they can reduce this time to 10 seconds but it still indicates that a step and repeat method will be needed to use this. At the expected work loads we will be incurring in the next two years, I believe this is much too time consuming. However, we may want to use this for some special applications.

7. The lens designs, "white gloves", are currently being negotiated and are being done by [] probably with the backup of [] under the new arrangement that [] has set up. I think that the optics price alone is on the order of []

8. During our visit, which was hurried, we discussed many theoretical problems and found out that one of their scientists is doing some fundamental research on the free radicals of developers which act as fog agents during developing process. They have a new scientist who was formally one of the chief researchers at Opto Mechanisms who has done very significant work in the past for the Air Force in single crystal photographic response. One of the interesting highlights of single crystal work is the fact that it can retain its photo sensitivity under extremely high radiation dosage. This is not true of silver halides as you know. It is believed by their group that evaporated silver bromide will react with the same characteristics as single crystal.

9. In the data management field we viewed an intriguing device which is being built for Bill Cude, ERDL, which has a capacity for 70,000 maps in storage on circular drum-like arrangements, the maps being reduced to approximately 70 mm size. With the automatic retrieval and rear projection display the gadget has a cross-hair which reads out in feet the changes of the cross-hair for the map scale. This item was very interesting in the light of the PI Cell concept because it provides rapid access to a large volume of graphic material by dialing a telephone-like system. The material comes up on display on the fixed projection distance in about 18 seconds after you dial. It can be restored in its proper place mechanically in about 8 seconds.

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10. There is so much to cover in the discussions and in the print of the fields which we are theoretically exploring that I believe that it would be to our advantage to have a team of at least [] myself visit [] for a couple of days in the near future with the proper clearances and pre-contract contact forms so that if we wish to use some of these devices we can take advantage of the research that is going on.

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11. At [] we discussed the [] concept with [] and he was extremely excited over the prospect of presenting a proposal which would be of minimum cost to produce a system which would reduce photographic data for optimum viewing characteristics. He has all of the equipment on hand to perform the initial experiment which could be demonstrated here at PIC using the 35 mm movie projector. From this experiment we can determine the exact parameters of any equipment that would have to be developed in order to do this as a SOP as an input to the PI Cell. They were intrigued with the simplicity and practical application of retinal persistence in the human eye to achieve the increased signal to noise ratio in the concept.

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12. In addition we explored the communication theory of frequency modulating light such as the Russians have claimed. The theory is well founded and has been done in radar already. As you will recall, the high acuity radar demonstration at the last 117L Advisory Committee was accomplished in much the same fashion that the Russians claim that they are achieving frequency modulation of light. This is not only probable but very practicable and [] has referred me to the work of a scientist at the [] to followup.

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13. We attended the Institute of Aero Space Scientists' annual award dinner and heard some very interesting discussions concerning the future of space, of air transportation, etc.

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